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REMARKS

Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fathimulla et al. (U.S. Patent No. 5,338,394) and Pearton et al. (Applied Physics Letters 60 (7)).

Applicant respectfully traverses the rejection. The Examiner states in part that: "Fathimulla describes a method for etching an III-V material comprising: placing the III-V substrate into a RIE chamber and etching the substrate with a gas mixture of HBr and CH₄ (claims 1-4). Unlike claimed invention, Fathimulla doesn't describe the gas mixture having H₂. Pearton teaches a method for etching III-V material wherein the gas mixture includes H₂ (pages 839; left column). It would have been obvious for one skilled in the art at the time of the invention to modify Fathimulla in light of Pearton by including H₂ in the gas mixture because Pearton teaches addition of the H₂ to the gas mixture provide a much smoother surfaces and Fathimulla teaches that other combinations of gas composition can be used to give a smooth vertical feature (col. 3, line 65-68)". The Examiner has failed to make a prima facie case of obviousness. Fathimulla discloses using HBr and CH₄ or HBr and H₂ together (see col. 2, lines 14-18) but not HBr, CH₄ and H₂ together. Pearton discloses using HI, Ar and H₂ together, noting that the addition of H₂ provided "much smoother surfaces with a decrease in etch rate of ~25% when the HI-H₂ ratio was unity". However, there is no implicit or explicit suggestion to combine the two references. Indeed, there is a teaching away by Fathimulla of using CH₄ and H₂ in the same mixture for smooth surfaces as they are always recited by Fathimulla in the alternative, e.g.: "H₂ or CH₄ is introduced into the ECR region" (emphasis added) (see

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col. 2, lines 56-57) and [s]mooth surfaces can be produced by reactive ion etching using a mixture of SiCl_4 , and H_2 or CH_4 . (emphasis added) (col. 3, lines 59-61). Hence, the Examiner has failed to make a prima facie case of obviousness because there is no motivation to combine and the teaching away of using CH_4 and H_2 together by Fathimulla is, in fact, an important indicium of nonobviousness (see U.S. v. Adams, 383 U.S. 39 1966 and In re Hedges, 783 2d 1038, Fed. Cir. 1986). Hence, Claims 1-20 are allowable over Fathimulla in view of Pearton.

Claims 1-3, 6, 7, 9-14, 17, 18, 20 are rejected under 35 U.S.C. 102(e) as being anticipated by Mirkarimi et al. (U.S. 2005/009016). Applicant respectfully traverses the rejection. The Background section of publication U.S. 2005/009016 cited by the Examiner states in relevant part "[r]ecent work by Mirkarimi (see Attorney Docket No. 10030753) has shown the usefulness of using $\text{HBr}:\text{CH}_4:\text{H}_2$ chemistry to achieve deep etching in III-V compounds. However, the sidewalls of the etched III-V structure in some quaternary compositions such as InGaAsP exhibit rough sidewalls when using $\text{H}[\text{B}]\text{r}:\text{CH}_4:\text{H}_2$ chemistry" (page 1, paragraph 3). This makes it clear that the invention was not described in an application for patent published under section 122(b) by another filed in the United states before invention by the applicant for patent. Clearly, the invention by Mirkarimi regarding $\text{HBr}:\text{CH}_4:\text{H}_2$ chemistry to achieve deep etching in III-V compounds predates the instant invention. Attorney Docket No. 10030753 is attached as Exhibit A. Hence, Claims 1-3 7, 9-14, 17, 18, 20 are allowable over Mirkarimi et al.

Claims 4, 5, 8, 15, 16, 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mirkarimi et al. as applied to claims 1, and 12 and further in view of Pearton et al. (Applied Physics Letters 60 (7)). The rejection is improper as Mirkarimi et

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al. qualifies as prior art only under 102(e). Hence, the rejection cannot be made under 35 U.S.C. 103(a) but only under 35 U.S.C. 103(c). Effective November 29, 1999 subject matter which was prior art under former 35. U.S.C. 103 via 102(e) is now disqualified as prior art against the claimed invention if that subject matter and the claimed invention "were at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person" see MPEP 706.02(1)(1). Both the subject matter and the claimed invention were owned by Agilent Technologies at the time of the invention. Hence, Claims 4, 5, 8, 15, 16 and 19 are allowable.

In view of the arguments presented above, the provisional obviousness-type double patenting rejection by the Examiner is moot.

Therefore, Claims 1-20 are in condition for allowance and allowance is respectfully requested. Should the Examiner wish to discuss any aspect of the application he is invited to telephone the undersigned at (650) 485-5904.

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Reg. No. 41,127Dated: 11-21-05

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